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Human Cloning: A Choice or an Echo

George J. Annas

COMMENTARIES

HUMAN CLONING: A CHOICE OR AN ECHO?

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I. INTRODUCTION

The chant is "cloning, cloning, cloning"; but the echo is "choice, choice, choice." From all the hoopla about human cloning as a human choice it would seem that cloning must be the most important scientific issue of our age. My intent in this Commentary is not to join this chorus, but to take advantage of cloning's high visibility to explore the nature of the choice it offers. What is it that makes human cloning at once so appealing to a few and so repulsive to most? The answer, I think, can be found in Roman mythology: Cloning recalls Ovid's myth of Echo and Narcissus.

Echo was a devastatingly beautiful woodland nymph who had one flaw, a fondness for chatter and an insistence on having the last word. One day Echo detained the goddess Juno with her chatter while Jove, who was cavorting with the nymphs, made his escape. When she discovered Echo's treachery, Juno cursed Echo, saying that she would henceforth only have the last word, but never the power to speak first. When Echo later pursued Narcissus, a beautiful youth, she could not speak to him, but could only repeat his last words. He rejects her, and she pines away until her bones change to rock and nothing is left but her reply voice.

Narcissus, who was equally cruel to all women, was ultimately cursed himself and fell in love with his own reflection, which he admired greatly. Being unable to attain it, and being shunned by it, he was ultimately consumed by his passion for his reflection and pined away and died. In cloning terms, Narcissus can be seen as the clonee, and his reflection as his clone. Echo is the personification of the curse that the clonee passes to its clone: never to speak first, but always to repeat that which has gone before. The lesson from mythology is clear: Duplicating yourself is sterile, self-absorbed, and ultimately destructive. Moreover, creating a clone in your own image is to curse your child by condemning it to be only an echo.

The myth of Echo and Narcissus helps explain the almost universal horror to the prospect of human cloning that greeted the news in 1997 that embryologist Ian Wilmut had cloned a sheep, creating the genetic twin of

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an adult animal by reprogramming one of its somatic cells to act as the nucleus of an egg.[1] He called the cloned lamb Dolly. This achievement was trumpeted as a scientific milestone. Debate about its implications for human cloning began immediately. Should this cloning technique be applied to humans? Who should decide and on what basis? Could human cloning be stopped?

The international press featured photographs of Dolly, usually duplicated one or more times, and often accompanied by bad puns (e.g., Could there ever be another ewe?, Cloning is baaad.). The most provocative cover appeared in the French edition of *Courrier International*, which ran photos of twenty-one identical sheep with the headline "*Dessine-Moi un Homme*" (Draw Me a Man).[2] These words would immediately bring to the mind of most French readers perhaps the twentieth century's most famous fable, *The Little Prince*.[3] The little prince introduces himself to pilot-philosopher Antoine de Saint Exupery, who has just crash-landed in the desert, with the words "Draw me a sheep" (*Dessine-moi un mouton*). Saint Exupery was unable to draw a sheep to the liking of the little prince, and in exasperation drew him a box with holes in it that he says houses a sheep. This unseen sheep completely satisfies the prince. *Dessine-moi un homme* suggests that, like the prince, we will never be satisfied with the results of human cloning because the clone will never live up to our image of what it should be.

We can learn a lot from the almost universal condemnation of human cloning and the international movement to ban it even if we never create a delayed or serial genetic twin of an existing human.[4] The most important things we can learn will likely be about life, not science, about values, not technique—things, like the prince's sheep, that are "invisible to the eye." The reason Ian Wilmut, and leaders around the world, called for a ban on applying cloning to humans is that the genetic replication of a human by cloning could radically alter the very definition of a human being by asexually replicating an existing or deceased human to produce the world's first human with a single genetic parent.[5] The danger is that through

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[1] Ian Wilmut et al., *Viable Offspring Derived from Fetal and Adult Mammalian Cells*, 385 NATURE 810 (1997).

[2] *Clonage Humain*, COURRIER INT'L (France), Mar. 12, 1997, at 1.

[3] ANTOINE DE SAINT EXUPERY, LE PETIT PRINCE 11 (5th ed. 1940).

[4] The delayed or serial genetic twin is an identical twin that is born later than its genetic twin. The source of the later born genetic twin could be either embryo splitting or nuclear substitution.

[5] The single genetic parent provides the nucleus from a somatic cell which is transferred into an egg from which the nucleus has been removed. Joan Stephenson, *Threated Bans on Human Cloning Research Could Hamper Advances*, 277 JAMA 1023 (1997).

human cloning we will lose something vital to our humanity, the uniqueness of every human. Cloning a human is also uniquely disturbing because it is the manufacture of a person made to order, it represents the potential loss of individuality and freedom, and it symbolizes science's unrestrained quest for mastery over nature for the sake of knowledge, power, and profits. Cloning can also be seen as undermining our very concepts of parenthood, parental responsibility, fertility, and the status and value of children.

Cloning can also be categorized as just another reproductive choice for infertile couples trying to have a baby, or as just another area of scientific research that scientists should have the choice to pursue. Choice is the overarching subject and theme of this Commentary, and I begin the exploration of the power of choice rhetoric with the debate over human cloning because human cloning itself is not currently possible, and may never be. Human cloning is a hypothetical and remote future choice for others, probably not yet born, that some Americans nonetheless want to preserve. Choice for its own sake.

II. CLONING AND IMAGINATION

For a brief time, in the early 1970s, human cloning was a centerpiece issue in bioethical debates in the United States. After the birth of Louise Brown, the world's first IVF ("in vitro fertilization") baby in 1978, however, it became tangential. The President's Bioethics Commission, for example, devoted only a single footnote to cloning in its 1982 report on genetic manipulation, *Splicing Life*. The footnote concluded: "The technology to clone a human does not—and may never—exist. Moreover, the critical nongenetic influences on development make it difficult to imagine producing a human clone who would act or appear 'identical.'"[6] And although cloning reemerged as a major bioethics issue in the popular press in October 1993, the NIH ("National Institutes of Health") Human Embryo Research Panel Report on human embryo research in September 1994 devoted only a single footnote to this type of cloning: "Popular notions of cloning derive from science fiction books and films that have more to do with cultural fantasies than actual scientific experiments."[7]

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[6] PRESIDENT'S COMMISSION FOR THE STUDY OF ETHICAL PROBLEMS IN MEDICINE AND BIOMEDICAL AND BEHAVIORAL RESEARCH, SPLICING LIFE: THE SOCIAL AND ETHICAL ISSUES OF GENETIC ENGINEERING WITH HUMAN BEINGS 9 n.5 (1982).

[7] HUMAN EMBRYO RESEARCH PANEL, NATIONAL INSTITUTES OF HEALTH, PUB. NO. 95-3916, REPORT OF THE HUMAN EMBRYO RESEARCH PANEL (1994). For a summary of the Human Embryo Research Panel's findings, see George J. Annas et al., *The Politics of Human Embryo Research: Avoiding Ethical Gridlock*, 334 NEW ENG. J. MED. 1329, 1329-32 (1996).

Scientists themselves have always taken human cloning more seriously. Joshua Lederberg summarized many of the arguments for and against governmental regulation of cloning in his 1966 essay "Experimental Genetics and Human Evolution."[8] And James Watson, the co-discoverer of the structure of DNA, argued in 1971 for a serious discussion of human cloning that might lead to a "blanket declaration of the worldwide illegality of human cloning."[9] Some bioethicists took up the challenge. Paul Ramsey used Lederberg's arguments as a starting point for his own arguments against cloning.[10] Joseph Fletcher, on the other hand, argued not only in favor of cloning ("if the greatest good of the greatest number"[11] could be thus served) but also in favor of biodesigning parahumans or 'modified men'—as chimeras (part animal) or cyborg-androids (part prostheses).[12]

Scientific musings and ethical discussions of cloning garnered Congressional interest as well. In 1972, a Congressional subcommittee asked the Library of Congress to study the status of genetic engineering.[13] Among other things, the resulting report dealt specifically with cloning and parthenogenesis applied to humans. [14] Although the report concluded that the cloning of human beings by nuclear substitution "is not now possible," its authors wrote that cloning "might be considered an advanced type of genetic engineering" if combined with the introduction of highly desirable DNA to "achieve some ultimate objective in genetic engineering."[15] Cloning, in other words, not as a replicative evolutionary dead end, but to try to make improvements to existing human genotypes. The report called for assessment and detailed knowledge, forethought and evaluation of the course of genetic developments, rather than "acceptance of the haphazard evolution of the techniques of genetic engineering [in the hope that] the issues will resolve themselves."[16]

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[8] Joshua Lederberg, *Experimental Genetics and Human Evolution*, 100 AM. NATURALIST 519 (1966).

[9] James D. Watson, *Moving Toward the Clonal Man*, ATLANTIC MONTHLY, May 1971, at 50, 50-53.

[10] PAUL RAMSEY, FABRICATED MAN: THE ETHICS OF GENETIC CONTROL (1970).

[11] JOSEPH FLETCHER, THE ETHICS OF GENETIC CONTROL: ENDING REPRODUCTIVE ROULETTE 154-56 (1988).

[12] *Id.* at 172-73.

[13] SCIENCE POLICY RESEARCH DIV., LIBR. OF CONG., 92D CONG., 2D. SESS., GENETIC ENGINEERING: EVOLUTION OF A TECHNOLOGICAL ISSUE III (Comm. Print 1972).

[14] *Id.* at 21.

[15] *Id.* at 22.

[16] *Id.* at 44.

Six years later, in 1978, a subcommittee of the House Committee on Interstate and Foreign Commerce held hearings on human cloning in response to the publication of David Rorvick's *The Cloning of a Man*.[17] All of the scientists who testified assured the committee that the account of the cloning of a human being was fictional and that the techniques described in the book could not work.[18] One scientist testified that he hoped that by showing that the book was false it would also become apparent that the issue of human cloning itself "is a false one, that the apprehensions people have about cloning of human beings are totally unfounded."[19] The major point the scientists wanted to make, however, was that they did not want any laws enacted that might affect their research. In the words of one, "There is no need for any form of regulatory legislation, and it could only in the long run have a harmful effect."[20]

Rorvik purported to tell a true story of Max, a wealthy man who wanted help to find a physician who would clone the avowed bachelor, surviving twin, and orphan. A physician with the unlikely code name of Darwin was found, and laboratory facilities were constructed in a remote country. Surrogate mothers were commandeered without knowledge or consent, and eventually a clone was successfully implanted into one of them, named Sparrow. She was secretly flown to California just prior to the birth of Max's clone and heir. Rorvik's tale makes good reading, and it summarizes most of the ethical and scientific arguments about cloning well. Unfortunately, the ensuing public debate on cloning centered not on the ethical issues but on whether or not the book was a hoax. This, of course, missed the point. The book was an elaborate fable and presented a valuable opportunity to discuss the ethical implications of cloning. The failure to see it as a fable was a failure of imagination. We normally do not look to novels for scientific knowledge, but they provide more—insights into life itself.[21] The issues Rorvik unearthed were quickly reburied.

Like ethical debate, Congressional discussion of human cloning was interrupted by the birth of Louise Brown in 1978. The ability to conceive a child outside the human body not only added a new way (in addition to artificial insemination) for humans to reproduce without sex but also made

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[17] DAVID M. RORVIK, IN HIS IMAGE: THE CLONING OF A MAN (1978).

[18] *Developments in Cell Biology and Genetics: Hearing Before the Subcomm. on Health and the Enviroment of the House Comm. on Interstate and Foreign Commerce*, 95th Cong., 2d Sess. (1978).

[19] *Id.* at 26.

[20] *Id.* at 27.

[21] JOHN HORGAN, THE END OF SCIENCE 152-53 (1996). "It is quite possible—overwhelmingly probable one might guess—that we will always learn more about human life and human personality from novels than from scientific psychology." *Id.* (quoting NOAM CHOMSKY, LANGUAGE AND PROBLEMS OF KNOWLEDGE 159 (1988)).

it possible for the first time for a woman to gestate and give birth to a child to whom she had no genetic relationship. Since 1978 a child can have at least five parents: a genetic and rearing father, and a genetic, gestational, and rearing mother. We pride ourselves as having adapted to this brave new biological world, but in fact we have yet to develop reasonable and enforceable rules for even so elementary a question as, "Who, among these five possible parents, should the law recognize as parents with rights and obligations to the child?" Many other serious problems, including embryo storage and disposition, posthumous use of gametes, and information available to the child regarding genetic and birth parents also remain unresolved.[22]

IVF represents a striking technological approach to infertility; nonetheless, the child is still conceived by the union of an egg and sperm from two human beings of the opposite sex. Even though no change in the genetics and biology of embryo creation and growth is at stake in IVF, society continues to wrestle with fundamental issues involving this method of reproduction twenty years after its introduction. For example, now that we can separate genetic from gestational motherhood, we must acknowledge that the resulting child has two mothers and determine which (or both) society should consider "the" mother of the child. Mother identification is also an issue in cloning (which will not only always require both an egg donor who will contribute mitochondrial DNA to the child and a woman to gestate the clone but could also add yet a third mother—the nucleus donor). Attorney Nanette Elster has identified thirteen different parental configurations in human cloning with four to ten competitors for the status of parent.[23]

Twinning by splitting an extracorporeal human embryo in two is the most rudimentary form of human cloning, and the closest to natural twins. The primary justification for embryo splitting has been to improve the efficiency of IVF, and the American Society for Reproductive Medicine ("ASRM") has justified research on embryo splitting as a possible way to improve the efficiency of IVF. ASRM's ethics committee cautions, however, that all twinned embryos should be implanted and gestated together to prevent the copy-original "delayed twin" problem that is at the center of the cloning debate.

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[22] George J. Annas & Sherman Elias, *Social Policy Considerations in Noncoital Reproduction*, 255 JAMA 62 (1986).

[23] Chicago-Kent College of Law, Is Human Cloning on the Horizon? (Dec. 5, 1997) (press release, on file with the *University of Dayton Law Review*).

This is because cloning of existing humans is replication, not reproduction, and represents a difference in kind, not in degree, in the manner in which human beings reproduce. Cloning has nothing inherently to do either with infertile couples or natural twins because women would be able to replicate themselves without male involvement, and without a limit of one clone at a time or per women. Asexual cloning by nuclear substitution represents such a discontinuity in the way humans reproduce. It is such a challenge to human dignity (by limiting the clone's life choices) and so devalues human life (by comparing the "original" to the "copy" in terms of which is to be more valued) that even the search for an analogy has come up empty-handed. This discontinuity means that although the constitutional right not to reproduce would seem to apply with equal force to a right not to replicate, to the extent that there is a constitutional right to reproduce if one is able, no existing liberty doctrine would extend this right to replication by cloning. One could, of course, drastically stretch existing doctrine to encompass replications. As the law now stands, choice is an insufficient justification for human cloning. We must probe deeper—and we can, by sitting our discussion on the operating table of science fiction.

III. CLONING AND SCIENCE FICTION

The witnesses at the 1978 Congressional hearing should have taken Rorvik's fictional account more seriously and used it as an opportunity to explore the public policy issues raised by his scenario, rather than attempting to discredit the book's factual premise. This mistake has been made repeatedly. The President's Bioethics Commission in 1981 and the NIH Embryo Panel in 1994 each failed to use the wide-ranging fiction literature on human cloning to inform their deliberations. And in 1997, when President Clinton asked his National Bioethics Advisory Board ("NBAC") to make recommendations about human cloning, the panel members failed again. Although acknowledging in their report that human cloning has always seemed the stuff of "science fiction" rather than science, the group did not commission even one background paper on how science fiction writing informs the debate. This is a fundamental error that prompts us to treat cloning as just another choice along the American highway of ever-increasing choices.

Fiction has probably done more than anything else to produce society's reaction to cloning—a mixture of fascination and horror—as exemplified by films such as *Blade Runner*, *Sleeper*, *Jurassic Park*, and *Multiplicity*. In *Multiplicity*, for example, a full-grown adult twin can be produced in two hours. This is totally outside even scientific speculation, although a similar technique was employed in an episode of *Star Trek:*

The Next Generation. In both of these dramas, repeated cloning produces errors and degeneration much the way repeated "xeroxing" of copies does.[24] The Star Trek crew, a group committed to scientific exploration and open to virtually any new experience or culture, rejects cloning as fundamentally opposed to basic human values.

Literary treatments of cloning have gone deeper. Cloning was the basis for governing Aldous Huxley's *Brave New World*. The key to social control in Huxley's society was the "Bokanovsky Process," in which a single embryo is stimulated to divide into ninety-six identical copies. These ninety-six embryos (or all the survivors, eighty-two on average) are then artificially gestated together under identical conditions designed to produce five classes of workers: Alphas, Betas, Deltas, Gammas, and Epsilons in descending order. Specific "batches" were conditioned to perform specific tasks and to love performing them.

Other novels have explored nongovernmental uses of cloning. In Ira Levin's *The Boys from Brazil* Mengele succeeds in creating 94 clones of Adolf Hitler. The idea of ninety-four Hitlers is a horrible one. Readers of the book, however, quickly realize that a Hitler clone would grow up in a far different world than Hitler did, and that environment and learning would result in a very different person. As the Nazi-hunter Liebermann puts it near the end of the novel, "I say in my talks it takes two things to make it happen again, a new Hitler and social conditions like in the thirties. But that's not true. It takes *three* things: the Hitler, the conditions . . . and the people to *follow* the Hitler."[25] Liebermann decides the real issue is not genetics, but human values. The children are not Hitler, no matter how identical their genetic makeup; and by killing them the Nazi-hunters would become what they despised: children killers. Liebermann explains to Rabbi Gorin that although Mengele thought he could produce another Hitler through cloning, this was "*his project, his ambition.*" "It could be that none will be . . . what their genes are. Children. How can we kill them? This was *Mengele's* business, killing children."[26] The lesson is that a clone, even a clone of Hitler, is an individual human being with all the rights to life of any other human person.

In Fay Weldon's *The Cloning of Joanna May* we witness four clones develop into four very different women. The wealthy Carl May secretly clones his wife after he discovers she has been unfaithful to him. When she later learns of the existence of the four clones of herself she thinks:

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[24] Xerox is a registered trademark of The Xerox Corporation, registration number 1010557.

[25] IRA LEVIN, THE BOYS FROM BRAZIL 261 (1976).

[26] *Id.*

> I am horrified, I am terrified, I don't know what to do with myself at all, whatever myself means now. I don't want to meet myself, I'm sure. I would look at myself with critical eyes, confound myself. I would see what I don't want to see, myself when young. I would see not immortality, but the inevitability of age and death. As I am, so they will become. . . . I can't even kill myself—they will go on. Now night will never fall.[27]

Personal identity is at the heart of objections to human cloning. The loss of personal identity is well-recognized by the clone's following the already-lived life of its genetically identical parent—original. Weldon argues that clones can undermine the lives of their genetic original as well. Joanna, nonetheless, seems to forgive her former husband on his death bed, and agrees to his dying wish: to raise his own clone. The author thus poses, but does not resolve, the issue of whether posthumous cloning is better or worse than cloning during one's lifetime. The knowledge that one's life choices have been limited, if not defined, by the choices of one's parent is a terrible burden. As Kirsten Banks puts it in her evocative *Lives of the Monster Dogs* (dogs bred for intelligence, and given speech and hands so they can be soldiers), "It is a terrible thing to be a dog [clone] and know it."[28]

What could the various panels have learned about cloning from an examination of these works of science fiction? That there are a wide variety of possible motives for cloning. That cloning is an evolutionary dead end that can only replicate what already exists—not improve it. That cloning is not about infertile couples or twins born together, but about replicating an indefinite number of genetic duplicates of an existing human being. That exact replication of a human is not possible. That governments, corporations, wealthy individuals, and rogue scientists might all want to do cloning experiments, many because they misunderstand what is possible—that clones must be accorded the same human rights as persons as other humans. And they could have understood that personal identity, human dignity, and parental responsibility are at the core of the cloning debate.

Literary treatments of cloning help explain why applying this technology to humans might undermine our concepts of human life, responsibility, and relationships. Dolly's "creator," Ian Wilmut, has consistently argued that his cloning technique should not be applied to humans. He has not used literature to bolster his argument, but he could. The reporter who described Wilmut as "Dolly's laboratory father," for example, probably could not have conjured up images of Mary Shelley's

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[27] FAY WELDON, THE CLONING OF JOANNA MAY 121 (1990).

[28] KIRSTEN BAKIS, LIVES OF THE MONSTER DOGS 138 (1997).

Frankenstein better if he had tried. Frankenstein was also his creature's father/god; the creature tells him: "I ought to be thy Adam." Like Dolly, the "spark of life" was infused into the creature by electric current. Unlike Dolly, the creature was created fully grown (not a cloning possibility, but what many Americans fantasize and fear), and wanted more than creaturehood: He wanted a mate of his "own kind" with whom to live and reproduce. Frankenstein reluctantly agreed to manufacture such a mate if the creature agreed to leave humankind alone. But in the end, he viciously destroys the female creature-mate, concluding that he has no right to inflict the children of this pair, "a race of devils," upon "everlasting generations." Frankenstein ultimately recognized his responsibilities to humanity, and Shelley's great novel explores virtually all the noncommercial elements of today's cloning debate.

The naming of the world's first cloned mammal also has great significance. The sole survivor of 277 cloned embryos (or "fused couplets"), the clone could have been named after its sequence in this group (e.g., C-137), but this would have only emphasized its character as a produced product. In stark contrast, the name Dolly (provided for the public and not used in the scientific report in *Nature*, where she is identified as 6LL3) suggests a unique individual. Whether Wilmut actually adopted this name because, as he has said, he used a mammary cell for the cloning, and Dolly Parton has famous mammary glands, is unimportant. The name Dolly works at many levels. Even at the manufactured level, a doll evokes joy in our children and is itself harmless. Victor Frankenstein, of course, never named his creature, thereby repudiating any parental responsibility. Naming the world's first mammal-clone Dolly is meant to distance her from the Frankenstein myth both by making her something she is not (a doll) and by accepting parental responsibility for her.[29] The name Dolly thus serves as a semantic intermediary that makes passage from rejection to acceptance possible.

Unlike Shelley's *Frankenstein*, Aldous Huxley's *Brave New World* future, in which all humans are created by cloning through embryo splitting

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[29] When I raised this issue at Senate hearings on cloning on March 12, 1997, Senator Thomas Harkin (D-Iowa) reacted quite negatively, suggesting that use of Frankenstein imagery was an attempt to scare the public, and that, regardless, "cloning will continue." *Capitol Hill Addresses the Ethics of Cloning* (CNN television newscast, Mar. 12, 1997) (transcript available *in* LEXIS, News/CNN file); *see Scientific Discoveries in Cloning: Challenges for Public Policy: Hearings Before the Subcomm. on Pub. Health & Safety*, 105th Cong., 1st Sess. 54 (1997) (statement of Senator Harkin). The author's prepared testimony is available at: George J. Annas, *Senator Frist, I greatly appreciate the opportunity* (visited Mar. 28, 1998) <http://www-busph.bu.edu/depts/lw/clonetest.htm>; *Scientific Discoveries in Cloning: Challenges for Public Policy: Hearings Before the Subcomm. on Public Health & Safety*, 105th Cong., 1st Sess. 41 (1997) (statement of Author).

and conditioned to join a specified worker group, was always unlikely. There are much more efficient ways of creating killers or terrorists (or even soldiers and workers) than through cloning. Physical and psychological conditioning can turn teenagers into terrorists in a matter of months—far easier than waiting some eighteen to twenty years for the clones to grow up and be trained themselves. Cloning has no real military or paramilitary uses. As discussed, even Hitler's clone would himself be a quite different person than the Hitler original because he would grow up in a radically altered world environment.

Science fiction helps us to articulate and understand the major social policy issues raised by attempting to clone a human; but it cannot make us apply its lessons. In deciding how to proceed, society has four basic policy models to choose from: the market model,[30] professional standards,[31] government regulation,[32] or an outright ban.[33]

IV. THE MARKET MODEL

Both the genetics and bioethics communities have consistently underestimated the power of market forces and commercialism to shape the demand for and uses of new reproductive technologies. In fact, the debates in the 1960s, 70s, and 80s are virtually silent about the likely role of the market in setting the practice parameters of the new genetics. We must not be so naive. Medicine itself is now widely viewed as a market good, and the once-nightmare scenario has become a reality: Medicine has become a business, and business ethics have eclipsed medical ethics.[34]

The market is a utilitarian's dream. And it is in the market's maximization of utility that its ideology unites with the libertarian belief in the primacy of personal choice as the ruling value in society. In the market all value preferences (choices) are measured in dollars. Private demand, often itself created by advertising, creates incentives to supply the demanded service to a point where marginal cost equals marginal revenue. Advertising to promote IVF services, for example, has catapulted IVF clinics into a billion-dollar annual business that continues to grow. In the private market, private interests prevail; those with the money can purchase services from willing sellers. Sellers themselves have the primary

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[30] *See infra* notes 34-41 and accompanying text.

[31] *See infra* notes 42-46 and accompanying text.

[32] *See infra* notes 47-54 and accompanying text.

[33] *See infra* notes 55-72 and accompanying text.

[34] *See* Arnold S. Relman, *The New Medical-Industrial Complex*, 303 NEW ENG. J. MED. 963 (1980).

motivation of making profits, since the ideology of the marketplace is the ideology of profit maximization.

We have a private market in sperm (donor insemination), ova (ova donation), and IVF but have so far not developed a private market in human embryos. In one horror scenario (which I suggested during the 1993 embryo splitting cloning debate *could* occur when and if human embryo cloning becomes feasible) an embryo could be split or cloned a number of times—say eight for the sake of argument. One would be implanted and the rest frozen. After the implanted embryo develops, is born, and is a few months old, its picture could be taken, and a complete genetic profile of the child, possibly with some rough intelligence scores, produced. The photo and information could then be placed in a catalog, and the other seven embryos could be offered for sale on the basis that they would produce children phenotypically *exactly* like the one pictured. This method of embryo splitting follow by freezing of some embryos has all of the problems of the "delayed twin" somatic cell cloning since the later born genetic twins would have to follow in the genetic steps of their first born twin. This is the same type of genetic bondage somatic cell clones must endure. Nonetheless, this might prove commercially attractive, since many people now select sperm donors, surrogate mothers, and ova donors based on their physical characteristics from similar catalogs with no guarantee that the desired characteristics will be inherited, and a genetic tie may be seen as unimportant by some couples.

What would be wrong with this practice? The problem is that the practice would set a price on *all* human characteristics (e.g., tall children would be worth more on the market than short ones, thin worth more than fat, etc.) and thus tend to commodify not only embryos but children themselves. The problem of selling human embryos can be illustrated by applying the sales provisions of the Uniform Commercial Code (UCC), demonstrating that at the least we will need new sales rules if we decide to let the market rule in embryo distribution. The UCC provides, for example, that goods can be rejected, and "if the seller gives no instructions within a reasonable time after notification of rejection, the buyer may store the rejected goods for the seller's account or reship them to him or resell them for the seller's account."[35] This could be read as applying more directly to the frozen embryo itself, but its potential application to the child produced as a result of the embryo transfer process simply illustrates the inappropriateness of sales in this area at all, and the ease with which the sale of embryos can quickly become confused with sale of children. A

[35] U.C.C. § 2-604 (1995).

simple way to stop commercialization in embryos before it starts is to regulate or manage the market by prohibiting the purchase and sale of human embryos, much the way we now prohibit the purchase and sale of human organs and fetal tissues. A federal statute prohibiting commerce in human embryos should be enacted.

It is worth noting that the major reason the cost of health care is out of control in the United States is that medical goods are viewed as market goods, and the individuals which deliver them, and the companies that produce them, earn money based both on price and volume. As economist Uwe Reinhardt has put it, "instead of necessity being the mother of invention, [now in medicine] invention [is] the mother of necessity."[36] He seems correct. When something new is "invented" in medicine, be it a drug or a procedure, its inventor immediately seeks to find or manufacture reasons that it is "medically necessary" for as many people as possible. For example, when IVF was first introduced into the United States in 1981, it was to be used only to solve infertility problems that are otherwise unsolvable (e.g., blocked fallopian tubes). Now, however, idiopathic infertility is a sufficient indication. Likewise, it was not surprising to see the George Washington University cloners explain in 1993 that their "embryo splitting" procedure could be used to make IVF more efficient. Efficiency, of course, is a market value, not a precept of medical ethics.

Free marketers and libertarian ethicists have already suggested that there might be good reasons to clone a human. Perhaps most compelling is cloning a dying child if this is what the grieving parents want. But this should not be permitted. Not only does this encourage the parents to produce one child in the image of another, it also encourages all of us to view children as interchangeable commodities. The death of a child thus need no longer be a singular human tragedy, but rather an opportunity to try to duplicate the no longer priceless deceased child. Moreover, cloning children demeans their personhood by denying them a say in their own replication. When a child is cloned, it is not the parents that are being replicated (or are "reproducing") but the child. The fact that all of the child's DNA came from the parents does not diminish the child's personhood or right to make his or her own reproductive choices. No one should have such dominion over a child (even a dead or dying child) as to be permitted to use its genes to create the child's child.

Population geneticist R.C. Lewontin has challenged my position that the first human clone would also be the first human with a single genetic parent by arguing that instead:

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[36] Uwe E. Reinhardt, *Reforming the Health Care System*, 19 AM. J.L. & MED. 21, 32 (1993).

> A child by cloning has a full double set of chromosomes like anyone else, half of which were derived from a mother and half from a father. It happens that these chromosomes were passed through another individual, the cloning donor, on their way to the child. That donor is certainly not the child's 'parent' in any biological sense, but simply an earlier offspring of the original parents.[37]

This position takes genetic reductionism to perhaps its logical extreme: People become no more than containers of their parent's genes, and their parents have the "right" to treat them not as individual human beings, but rather like human embryos—entities that they can "split" and "replicate" at their whim without any consideration of the child's choice or welfare. Children (even adult children) under this view have no say in whether they are replicated or not, because it is their parents, not them, who are "reproducing." This radical redefinition of reproduction and the denial of the choice to procreate or not of children turns out to be an even stronger argument against cloning children than its biological novelty.

Humans have a basic right not to reproduce, and human reproduction (even replication) is not like reproducing farm animals, or even pets. Ethical human reproduction properly requires the voluntary participation of the genetic parents, as Joanna May would certainly insist.[38] This is one reason, for example, why fetal eggs cannot be used for human reproduction: Voluntary participation is not possible. Children are not medicine or treatment (even for intense grief) and should not be used solely as means to other people's ends. Related human rights and dignity would also prohibit using cloned children as organ sources for their father/mother original. Nor is there any "right to be cloned" that an adult might possess that is triggered by marriage to someone with whom the adult cannot reproduce. While it is possible to posit some scenarios in which cloning could be used for infertility treatment, in all of them, having children to rear by existing means is possible. The use of cloning simply provides another choice for choice's sake, not out of necessity. Moreover, in a fundamental sense cloning cannot be a treatment for infertility. This replication technique changes the very concept of genetic infertility itself, since all humans have somatic cells that could be used for replication.

My colleague John Robertson wrote the free marketer's guide to new reproductive technologies in 1994, entitled *Children of Choice*.[39] His basic

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[37] Richard C. Lewontin, *Confusion over Cloning*, N.Y. REV. BOOKS, Oct. 23, 1997, at 18, 21.

[38] *See supra* note 27 and accompanying text.

[39] JOHN A. ROBERTSON, CHILDREN OF CHOICE: FREEDOM AND THE NEW REPRODUCTIVE TECHNOLOGIES (1994).

thesis is that "procreative liberty" requires the government to keep out of any private deals between adults and their physicians that might result in the production of a child (assuming, of course, that the adults can pay the price demanded by the physician to exercise this choice). Robertson, and most IVF clinics, use the allure of children to make their quest seem altogether benign and natural. Nonetheless, children have virtually no place in either Robertson's book or in the practice of IVF clinics: The market rules and no one in the entire contracting process speaks for the future child.

In the cloning context Robertson adopts the same rationale to discount our obligations to our children as he does with IVF generally: It is impossible to harm a child of cloning because if cloning were not used, the child would not exist at all. In his words:

> [T]here is no unharmed state, other than nonexistence, that could be achieved as a point of comparison. If cloning did not occur, the cloned individual would not exist. If she had been given a different genome, that is, not been cloned, she would not be the same individual. Thus even if the clone suffers inordinately from her replica status, there is no alternative for her if she is to live at all. Unless the life . . . were a wrong (an unlikely scenario), cloning would then—whatever its psychosocial effects—not harm offspring.[40]

This classic argument is actually a tautology. It applies to all of us—none of us would exist were it not for the precise and unpredictable time the sperm from our father and egg from our mother met. This fact, however, does not justify a conclusion that our parents had no obligations to us as their future children. There are many ways to harm future children prior to conception, and the fact that we may not permit these harmed children to sue their parents for damages because we are unable to compare their damaged existence with no existence at all (the "choice" for them if their parents had not decided to have children) does not mean that future children can be manufactured in any way parents want. If it did, it would be equally acceptable, from the child's perspective, to be gestated in a great ape, or even a cow; or to be composed of a mixture of ape genes and human genes. It would also be acceptable to make conjoined twins by design. But in these cases real and predictable harm will be done to future children, and this harm can be avoided. The biological fact that these particular children would not exist but for great ape genes or great ape gestation, or as conjoined twins, provides no ethical justification to visit these harms on children by subjecting them to these manipulations. Harm to the child is thus not the right (or at least not the only) question: It takes children out of context by ignoring or marginalizing parental obligations

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[40] *Id.* at 169 (footnote omitted).

and family ties and posits the morally untenable postulate that it is acceptable to use any method to produce a child as long as that method is likely to produce a child whose existence is preferable to nonexistence. Daniel Callahan has put it another way: "Nowhere has anyone suggested that cloning would advance the cause of children. And why should anyone? . . . [Children] in our world do not suffer from an absence of cloning."[41]

V. PROFESSIONAL GUIDELINES

Because IVF is a medical procedure, it has seemed reasonable to ask the medical profession, through its specialty groups, to set standards not only for IVF but for the entire range of assisted reproduction techniques, and for research on these techniques as well. Control of IVF research was *de facto* ceded to the medical profession by the United States government when the Reagan and Bush administrations refused to provide federal funding for embryo and IVF-related research and abandoned the Ethics Advisory Board. This prompted fertility specialists to "skip" the research phase altogether and move IVF immediately into clinical practice. Research protocols like that used in the George Washington University embryo cloning experiment are often reviewed only by local institutional review boards ("IRBs").[42] Such review is unimpressive because IRBs, have no special expertise in embryo research, are composed primarily of other researchers, meet in secret, and generally approve whatever projects their colleagues want to perform. Today, Max would not have to secretly hire a physician and have his cloning research done offshore. Max could have funded his cloning experiment at any of a variety of private facilities in the United States. Unless the facility chosen was affiliated with a hospital or medical school, Max's cloning experiment would not have to be reviewed by anyone.

Geneticist-obstetrician Sherman Elias and I have consistently urged medical specialty organizations to set and follow standards of care, and that in regard to reproductive technologies, "primary consideration should always be given to the welfare and 'best interests' of the potential child."[43] Unfortunately, to date the relevant professional associations have not been able to move beyond the market-consumer model. Current practice is to

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[41] Daniel Callahan, *Responding to the NBAC*, HASTINGS CTR. REP., Sept.-Oct. 1997, at 19.

[42] *See supra* text accompanying notes 36-37.

[43] GEORGE J. ANNAS & SHERMAN ELIAS, REPRODUCTIVE GENETICS AND THE LAW 241 (James D. Ryan, Jr. ed., 1987).

provide consumer-patients whatever they want (and can pay for) rather than attempt to develop a professional model that sets meaningful practice and ethics standards, or that takes the welfare of resulting children seriously.

Professional-organization ethics committees composed primarily of practitioners are simply too narrow to be anything but self-serving in their outlook and actions. A similar observation can be made concerning IRBs and state licensing boards. We cannot expect physician-dominated groups to protect the interests of patients any more than a guard-dominated group would protect the interests of prisoners, a landlord-dominated group would protect the interests of tenants, or a police-dominated group would protect the interests of suspects. As my colleague Michael Baram put it more than twenty years ago when he was teaching at MIT:

> I do not think scientific peer groups presently have the objectivity or capability to function as coherent and humane social controls. The members of a peer group share the narrow confines of their discipline, and individual success is measured by the degree to which one plunges more deeply into and more narrowly draws the bounds of his research. There are no peer group rewards for activities or perceptions that extend beyond the discipline or relate it to social problems. Members are therefore neither motivated nor trained to relate their peer group activity to broader social concerns. . . . Self-enclosed peer groups cannot be entrusted with self control.[44]

If anything has changed over the past twenty years, it is the emergence of the market as an even stronger force in shaping professional standards than professional self-identity. Professional organizations, of course, exist to foster the interests of their members. Thus it is not surprising that the ethics committees of these organizations exist primarily to give ethical cover to the practices of their members. The 1994 publication of the Ethics Committee of the American Fertility Society (now the American Society for Reproductive Medicine ("ASRM")), for example, has thirty separate statements—not one is about children.[45]

I have been a member of that ethics committee for the past four years. In December 1995, when we were reviewing drafts of five position papers,[46] I suggested that the committee's work to date supported the following description of the committee's operating assumptions: (1) The

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[44] Michael S. Baram, *Social Control of Science and Technology*, 172 SCIENCE 537 (1971) (concluding that self-enclosed peer groups cannot be entrusted with self-control).

[45] Ethics Comm. of the Am. Fertility Soc'y, *Ethical Considerations of Assisted Reproductive Technologies*, 62 FERTIL. & STERIL. i-ii (1994).

[46] The position papers concerned oocyte donation to postmenopausal women, use of fetal oocytes in reproduction, preimplantation genetic diagnosis and sex selection, informed consent and the use of gametes and embryos for research, and disposition of abandoned embryos.

ethical acceptability of new reproductive technologies is assumed, and the burden of proof is on anyone who would question a new technology to show how its use is unethical; (2) A use of a new technology cannot be declared unethical if there is any possible ethical application of that technology, no matter how hypothetical; (3) It is assumed that imagined new technologies will ultimately work and will produce benefit, and that any imagined harms from the technology are speculative or can be controlled unless proven otherwise; and (4) The major values to be taken into account in evaluating new reproductive technologies are economic (efficiency, supply, and cost) not ethical.

I rather naively thought that the committee would find these operating assumptions threatening or at least embarrassing. I was wrong. Most of the members simply found this assessment descriptive. As the chairman put it, this is a generally accurate description of how the committee works: If any good can be imagined from a new technology its use should not be declared unethical. Whatever one thinks about this stance as applied to the new reproductive technologies in general, it has been adopted by the proponents of human cloning who argue that it is just another choice for reproduction and should not be outlawed if any possible ethically acceptable scenario, no matter how speculative, can be imagined. It is thus notable that ASRM's governing board has taken a strong position against somatic cell cloning—the first technique it has ever opposed.

If it is true that market values have been *de facto* incorporated into professional medical values (and are often indistinguishable), then professional ethics and practice standards provide no public protection—only monopoly protection for the medical profession itself. We must then turn to governmental regulation to "manage" medicine's market competition in research related to the new reproductive technologies, as well as clinical practice itself.

VI. GOVERNMENT REGULATION AND OVERSIGHT

The United States is virtually unique in the developed world in its hands-off attitude toward government regulation of embryo research specifically, and the new reproductive technologies in general. Although NIH did form an advisory panel to make recommendations about embryo research in February 1994, prior to this there had been no federal activity in this area since the Ethics Advisory Board was abandoned in 1979. This lack of activity (and thus of oversight) was caused by the antiabortion agenda of the Reagan and Bush administrations, which identified embryo research with abortion and condemned all embryo research on the basis

that human life begins at conception. This view has not ultimately prevailed in either Congress or the United States Supreme Court, and honest and open discussion and regulation of embryo research and human cloning now seems possible. It is about time.

There are societal issues involved in embryo research and cloning, especially regarding the rights of potential parents and the welfare of their children, that demand governmental oversight.[47] The United States has long recognized the government's interest in protecting subjects of human experimentation, most forcefully in the 1947 Nuremberg Code pronounced by United States judges sitting in judgment of the Nazi physicians at Nuremberg. Nor has Congress been silent, establishing a National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1974-78), the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research (1979-83), and the Biomedical Ethics Advisory Committee (1988-89). This last body was unable to function because of its split on abortion, but the other two produced important and useful ethical guidelines. A NIH body, the Ethics Advisory Board (1977-79), also produced a set of useful recommendations regarding IVF-related embryo research, as did a NIH panel in 1994.

President Clinton's National Bioethics Advisory Committee ("NBAC"), formed in the fall of 1996, continues this tradition. This is laudable, but I believe it is time to move beyond an advisory committee and establish a regulatory commission, a federal Human Experimentation Agency ("HEA"), with both rule-making and adjudicatory authority in the area of human experimentation. This would mean HEA could both promulgate rules governing human research and have authority to review and approve or disapprove research proposals in specific areas such as xenografts, artificial organs, embryo research (including cloning), genetic engineering, and other similar experiments that local IRBs are simply incapable of meaningfully reviewing. HEA should also recommend legislation to Congress, including, for example, a ban on the sale of human embryos. Finally, HEA could provide the United States with an authoritative voice in the international arena, where cooperation will become increasingly important.

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[47] In the spring of 1998, the New York Task Force on Life and the Law became the first public body in the U.S. to review all of the new reproductive technologies, including embryo research and cloning, and make legislative recommendations. NEW YORK TASK FORCE ON LIFE AND THE LAW, N.Y. STATE HEALTH DEP'T, ASSISTED REPRODUCTIVE TECHNOLOGIES AND RECOMMENDATIONS FOR PUBLIC POLICY (1998); *see* Lawrence K. Altman, *Health Panel Seeks Sweeping Changes in Fertility Therapy*, N.Y. TIMES, Apr. 29, 1998, at A1, A21.

An example helps illustrate why such an agency is needed. Cloning is replication and as such holds little attraction or interest for people who want to have children. Most of us want our children to have better lives than we have had, not to repeat them. That is why, although it received almost no public press, the experiment that Wilmut and his team published at the end of 1997 was in many ways much more important than Dolly. In that experiment, human genes and gene markers were added to fetal cells, and the resulting combined cells were used as nucleuses in enucleated eggs. [48] As a result six transgenic lambs were born: three contained the human gene for blood coagulation (factor IX).[49] The potential (but far futuristic) possibility this technique raises (if it works with adult somatic cells as it did with fetal cells) is that an adult might have him or herself cloned, but *add* genes or partial gene sequences to his or her genome to try to enhance or better the clone. The enhanced clone would then not be genetically identical, but "better" in terms of height, immune system, intelligence, or whatever genes could be successfully added to the cell that serves as a nucleus to the enucleated egg. This prospect could hold mass appeal, and deserves much more attention than mere replication does.

Although NBAC could not agree on much, it did conclude that any attempt to clone a human being should be prohibited by basic ethical principles that prohibit putting human subjects at significant risk without their informed consent. Dolly's birth was a 1-in-277-embryo chance.[50] The experiment has yet to be repeated, and in early 1998 Wilmut himself said he thought it would take more than 1,000 tries before he could clone another lamb from a somatic cell.[51] The birth of a human from cloning might be technologically possible, but we could only discover this by unethically subjecting the planned child to the risk of serious genetic or physical injury, and subjecting a planned child to this type or risk will likely never be justified. Because we will likely never be able to protect the human subject of cloning research from serious harm, the basic ethical rules of human experimentation may always prohibit us from ever using it on humans. On the other hand, safety is the same argument that was used against trying IVF in humans; an argument that Baby Louise's birth

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[48] Angelika E. Shnieke et al., *Human Factor IX Transgenic Sheep Produced by Transfer of Nuclei from Transfected Fetal Fibroblasts*, 278 SCIENCE 2130 (1997); *see* Robert L. Hotz, *Scientists Add Human Gene to Three Cloned Lambs*, LOS ANGELES TIMES, Dec. 19, 1997, at A1.

[49] Shnieke, *supra* note 48; *see also* Hotz, *supra* note 48.

[50] Wilmut, *supra* note 1, at 811-12.

[51] Gina B. Kolata, *Creator of Cloned Sheep Says He Will Try to Repeat Process*, N.Y. TIMES, Feb. 2, 1998, at A7; Nicholas Wade, *Scientist Who Announced Cloning of Sheep Is Taking Steps to Win over Critics*, N.Y. TIMES, Feb. 28, 1998, at A6.

falsified. Because danger itself will not prevent scientists and physicians from first-of-their-land experiments, from a baboon heart in a baby to an artificial heart in an adult, and because the technique may be both safer and more efficient in the future, we must identify a stronger basis on which to resist human cloning in the long term.

Virtually all those who have studied the matter have concluded that a broad-based *public* panel is needed to oversee human experimentation in the areas of genetic engineering, human reproduction, xenografts, artificial organs, and other boundary-crossing experiments. Any new national regulatory panel must be composed almost exclusively of nonresearchers and nonphysicians so it can reflect public values, not parochial concerns. One of the most important procedural steps a federal Human Experimentation Agency could take would be to put the burden of proof on those who propose to do novel experiments that call deeply held societal values into question, including cloning. I continue to think that this shift in the burden of proof is critical to effective societal influence over science, and is the most important point I tried to make in my testimony before a United States Senate committee, at which Ian Wilmut also testified, in March 1997.[52] Without this shift, social control is not possible. This model applies the precautionary principle of international environmental law to cloning. The principle requires governments to protect public health and the environment even in the absence of clear evidence of harm.[53] Under it, human cloning proponents would have the burden of proving that there is an important societal purpose for such an experiment before it is permitted, rather than the regulators having the burden of proving that there is some compelling reason not to approve it. This regulatory scheme would depend upon at least a *de facto* if not *de jure* ban or moratorium on such experiments before their societal approval. Is this possible?[54]

VII. MORATORIA AND BANS ON HUMAN CLONING

It has been almost thirty years since James Watson first suggested the world might want to outlaw human cloning, although no serious thought was given to this prospect until 1997. Is a worldwide ban possible? Reaction to the birth of Dolly almost exclusively centered on such a ban.

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[52] *See supra* note 29.

[53] *See generally* Frank B. Cross, *Paradoxical Perils of the Precautionary Principle*, 53 WASH. & LEE L. REV. 851 (1996) (explaining the precautionary principle).

[54] For arguments against a ban see GINA B. KOLATA, CLONE: THE ROAD TO DOLLY AND THE PATH AHEAD (1998); GREGORY PENCE, WHO'S AFRAID OF HUMAN CLONING? (1997); and Lawrence H. Tribe, *Second Thought on Cloning*, N.Y. TIMES, Dec. 5, 1997, at A39.

Countries around the world, including France, China, Argentina, and Iran, almost immediately adopted bans and called upon the world community to enact an international ban. Such a ban was also urged on the world by the G-7 countries, meeting in Denver in June 1997. Only in the United States, leaders of the other countries suggested, would government hesitate to ban use of cloning a technology in humans on the basis of personal liberty or choice.

President Clinton initially said he would wait ninety days for his ethics advisory board to report to him on what to do, but a few days later he issued an executive order outlawing the use of any federal funds to do research designed to produce a human clone,[55] and urged private industry to voluntarily refrain from human cloning research. Ninety days later his advisory board (the NBAC) recommended a time-limited ban of three to five years on the creation of a human "delayed genetic twin" by somatic cell transfer, during which time more discussion and debate could take place.[56] This recommendation was adopted primarily on the basis that attempting human cloning at this time is too dangerous to the physical health of the resulting child. The chair of the board, Harold Shapiro, wrote in *Science*, in explaining the recommendation, that the board had to consider "vitally important social and constitutional issues," listing as the first one, "protecting the widest possible sphere of personal choice."[57]

On the recommendation of NBAC, the White House sent proposed legislation to Congress on June 9, 1997. The proposed "Cloning Prohibition Act of 1997" would outlaw human cloning for the next five years.[58] The operative portion of the proposal is its prohibition: "It shall be unlawful for any person or other legal entity, public or private, to perform or use somatic cell nuclear transfer with the intent of introducing the product of that transfer into a woman's womb or in any other way creating a human being."[59]

"Somatic cell nuclear transfer" is defined as "the transfer of a cell nucleus from a somatic cell into an egg from which the nucleus has been

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[55] President's Memorandum on the Prohibition on Federal Funding for Cloning of Human Beings, 33 Weekly Comp. Pres. Doc. 281 (Mar. 4, 1997).

[56] NATIONAL BIOETHICS ADVISORY COMMISSION, CLONING HUMAN BEINGS: REPORT AND RECOMMENDATIONS OF THE NATIONAL BIOETHICS ADVISORY COMMISSION 107-10 (1997).

[57] Harold T. Shapiro, *Ethical and Policy Issues of Human Cloning*, 277 SCIENCE 195-96 (1997).

[58] President's Message to the Congress transmitting the proposed "Cloning Prohibition Act of 1997," 33 WEEKLY COMP. PRES. DOC. 845 (text of proposed legislation on file with *University of Dayton Law Review*).

[59] *Id.* § 5.

removed."[60] The proposed Act specifically does not prohibit or restrict any other type of research, including: "(1) the use of somatic cell nuclear transfer or other cloning technologies to clone molecules, DNA, cells, and tissues; or (2) the use of somatic cell nuclear transfer techniques to create animals."[61] Penalties for violation of the prohibition are a fine of "$250,000 or two times the gross gain or loss from the offense," whichever is greater.[62]

The Clinton proposal joined several others in Congress and almost a dozen in various states.[63] Because it is specific about both what it seeks to outlaw (the replication of an existing or deceased human being by somatic cell transfer) and what it permits (all other cloning techniques), it is the most understandable. The President's laudable goal is to prohibit the cloning of a human while permitting a wide range of other cloning research.[64] His bill, for example, would not prohibit cloning by embryo splitting, although to prevent the creation of a "delayed genetic twin" all such embryos must be implanted at the same time. Virtually all other proposals have definitional problems so severe that they are either too vague to provide guidance or overly broad in their reach. For example, a Senate bill introduced by Christopher Bond (R-Missouri) defined cloning as "the replication of a human individual by the taking of a cell with genetic material and the cultivation of the cell through the egg, embryo, fetal, and newborn stage into a new human individual."[65] This seems to permit research through implantation and fetal development. A House version, introduced by Vern Ehler (R-Michigan), defined cloning as "the use of a human somatic cell for the process of producing a human clone."[66] What exactly this means is unclear.

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[60] *Id.* § 4(c).

[61] *Id.* § 7(a).

[62] *Id.*

[63] S. 1599, 105th Cong., 2d Sess. (1998); S. 1574, 105th Cong., 2d Sess. (1998); S. 1601, 105th Cong., 2d Sess. (1998); S. 1602, 105th Cong., 2d Sess. (1998); S. 1611, 105th Cong., 2d Sess. (1998); H.R. 3133, 105th Cong., 2d Sess. (1998); H.R. 922, 105th Cong., 1st Sess. (1997); H.R. 923, 105th Cong., 1st Sess. (1997).

State proposed bans on cloning and cloning research include: S.B. 68, Reg. Sess. (Ala. 1998); H.B. 5475, Reg. Sess. (Conn.1998). H.B. 3206, 19th Leg. (Haw. 1997); S.B. 411, 110th Gen. Assembly, 2d Sess. (Ind. 1998); H.B. 2846, 77th Leg., Reg. Sess. (Kan. 1998); H.B. 932, Reg. Sess. (Md. 1998); S.B. 864, 89th Leg., Reg. Sess. (Mich. 1998); H.B. 1658, 155th Sess., 2d year (N.H. 1998); A.B. 329, 208th Leg. (N.J. 1998); S.B. 218, 122d Gen. Assembly, Reg. Sess. (Ohio 1998); H.B. 7123 (R.I. 1998); H.B. 3617, 112th Sess. (S.C. 1998); S.B. 2295, 100th Gen. Assembly (Tenn. 1998); H.B. 1237, Reg. Sess. (Fla. 1997); H.B. 1508, 144th Gen. Assembly, Reg. Sess. (Ga. 1997); S.B. 2235, 90th Gen. Assembly, Reg. Sess. (Ill. 1997); H.F. 2730, 80th Reg. Sess. (Minn. 1997).

[64] President's Message, *supra* note 58, §§ 3, 6.

[65] S. 368, 105 Cong., 1st Sess. § 1(b) (1997).

[66] H.R. 922, 105 Cong., 1st Sess. § 2(a) (1997).

In early 1998 a Chicago physicist, Richard Seed made national news by announcing that he intended to raise funds to clone a human.[67] Because Seed lacked both the scientific knowledge and laboratory tools to attempt cloning and had no understanding of the ethical controversies involving cloning or research on children, his proposal was greeted with almost universal condemnation.[68] Like the 1978 Rorvik hoax, however, it did provide another opportunity for public discussion of cloning, and President Clinton took the opportunity to renew his call for federal legislation outlawing human cloning. The Seed affair provided the impetus to get the President's proposal introduced into Congress, but only as a reasonable alternative to a much more draconian Senate Bill, S. 1601, that would have outlawed not only the attempt to clone a human being, but all cellular cloning based on the creation of human embryos for research. This anti-cell cloning bill was rejected by the United States Senate in February 1998.

The Clinton proposal seems to have been modeled on California's draft legislation, which in modified form became the first law in the United States outlawing human cloning in October 1997.[69] The California law imposes a five-year moratorium on human cloning and selling gametes, embryos, or fetuses for human cloning. Under the law, cloning

> means the practice of creating or attempting to create a human being by transferring the nucleus from a human cell from whatever source into a human egg cell from which the nucleus has been removed for the purpose of, or to implant, the resulting product to initiate a pregnancy that could result in the birth of a human being.[70]

Because it ignored the rich literature on cloning, the NBAC was unable to do more than recommend that they be given another five years to study the problem of human cloning. This is reasonable, but much too narrow. Cloning is unique, but the concerns it raises are not. If choice is the only rationale for cloning, for example, there is no sufficient rationale for human cloning. The moratorium deserves to be made permanent in the form of a ban, and we should use it as an opportunity both to develop a national human experimentation agency and to foster international cooperation in the regulation of human research that affects us all.

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[67] J. Madeleine Nash, *Cloning's Kevorkian*, TIME, Jan. 19, 1998, at 58.

[68] Richard A. Knox, *A Chicagoan Plans to Offer Cloning of Humans*, BOSTON GLOBE, Jan. 7, 1998, at A3; Gina Kolata, *Proposal for Human Cloning Draws Dismay and Disbelief*, N.Y. TIMES, Jan. 8, 1998, at A22.

[69] CAL. HEALTH & SAFETY CODE §§ 24185-24189 (West 1997).

[70] *Id.* § 24185.

Treating infertility by using the new reproductive technologies has become a multibillion dollar business that is itself dominated not by the medical ideology of the best interests of patients and their children, but by the market ideology of profit maximization under the guise of reproductive liberty. Government in our constitutional, democratic society has the authority to make reasonable regulations to manage the market in a way that protects the interests of the public, prospective parents, and their future children. The domination of the divisive and narrow abortion debate has meant that the federal government has not played any role for almost two decades in the regulation of embryo research or of clinical application of the new reproductive technologies. This inactivity must end as we attempt to replace the ideology of the market with an ideology of human welfare that takes its responsibility to future generations seriously.

In this respect, I can conclude the discussion of choice and cloning on the same note with which I opened this Commentary—the curse of being an echo. The primary reason for banning human cloning was articulated by philosopher Hans Jonas in the early 1970s. He correctly noted that it does not matter that creating an exact duplicate of an existing person is physically and psychologically impossible. What matters is that a specific person is chosen to be cloned because of some characteristic or characteristics that person possesses (and, it is hoped, would be also possessed by the copy or clone). Jonas argued that cloning is a crime against the clone, the crime of depriving the clone of his or her "existential right to certain subjective terms of his being"—most particularly, the "right to ignorance" of facts (about his original) that are likely to be "paralyzing for the spontaneity of becoming himself."[71] This advance knowledge of what another has or has not accomplished with the clone's genome destroys the clone's "condition [for] authentic growth" in seeking to answer the fundamental question of all our beings, "Who am I?" Jonas continues:

> In brief [the clone] is antecedently robbed of the *freedom* which only under the protection of ignorance can thrive; and to rob a human-to-be of that freedom deliberately is an inexpiable crime that must not be committed even once. . . .
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> . . . The ethical command here entering the enlarged stage of our powers is: never to violate the right to that ignorance which is a condition . . . of

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[71] HANS JONAS, PHILOSOPHICAL ESSAYS: FROM ANCIENT CREED TO TECHNOLOGICAL MAN 160-61 (1974).

authentic action; or: *to respect the right of each human life to find its own way and be a surprise to itself.*[72]

Jonas is correct. His argument applies only to a "delayed genetic twin" created from an existing human, not to genetic twins born at the same time. Even if one does not agree with Jonas, however, it is hypocritical to argue that a cloning technique that limits the liberty and choices of the resulting child can be justified on the basis that cloning expands the liberty and choices of would-be cloners. There is more at stake here than a hollow chant of choice.

To summarize, there are a series of reasons to ban human cloning. At the individual/family level there is the issue of human experimentation and the danger to the health of the clone. More is the Echo-Narcissus syndrome: The parent who is so in love with himself or herself that only a duplicate can fulfill their yearning for perfection (but this yearning can never be fulfilled and will only result in disappointment and death); and the child-clone who is cursed by its parent never to speak first, but only to be an echo of the parent's already-lived life. Cloning is simultaneously self-indulgent and self-destructive, and creates a child with a curse rather than a blessing. At the societal level, cloning threatens to change the value of children by seeing them as products made to order, and all humans by undermining the uniqueness of every individual on which human dignity is based. Finally, at the species level, cloning changes the essence of human sexuality by abolishing the necessity of sexual reproduction, and with it our concepts of fertility and infertility.

VIII. CATEGORIES AND CLONING

French philosopher Michel Foucault writes that a passage from the great Argentine writer Jorge Luis Borges incited him to write an entire book exploring how science and society categorize or order things, entitled *The Order of Things: An Archeology of the Human Sciences*.[73] The passage quotes "a 'certain Chinese encyclopaedia'" which divides animals into "'(a) belonging to the Emperor, (b) embalmed, (c) tame, (d) sucking pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) *et cetera*, (m) having just broken the water pitcher, (n)

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[72] *Id. at* 162-63.

[73] MICHEL FOUCAULT, THE ORDER OF THINGS: AN ARCHAEOLOGY OF THE HUMAN SCIENCES xv (Vintage Books ed., 1973).

that from a long way off look like flies.'"[74] Borges did not add (but we can) "(o) cloned lambs," to his list. While each separate category is possible, Foucault (who writes that he could hardly stop laughing, albeit uneasily, at this ordering), observes that the "monstrous quality" in this categorization is the fact that "the common ground" on which a "meeting[]" of all of these animals would be possible "has itself been destroyed."[75] We can thus never find a container to accommodate all of the entries. Put another way, "Absurdity destroys the *and* of the enumeration by making impossible the *in* where the things enumerated would be divided up."[76]

Foucault was concerned with order (and disorder) and how society orders things to make meaning out of them. Focault was not so much interested in proving the "truth" of life, as he was in understanding why we think the way we do, and therefore what things seem normal or natural to us. The question of human cloning can usefully be examined from a categorical ordering perspective. More precisely, where does cloning "fit"? If we put cloning into the category of human reproduction, it will be in a list including such things as in vitro fertilization, embryo transfer, and artificial insemination, and we will judge it through the same lens that we have judged these other methods of "artificial reproduction." We could also put it in an ordered list of embryo manipulations, a list of scientific challenges, or a list of manufactured products. I think the list it fits into is a different list altogether. It is a list of types of asexual reproduction or replication. Other possibilities include a list of science fiction scenarios, a list of unnatural activities, and a list of crimes against humanity. The list into which we fit human cloning matters—and will likely determine how society both in the United States and the world deals with it.

Cloning does not "fit into" the category of international crimes against humanity: (a) genocide, (b) murder, (c) torture, (d) slavery. Indeed, the international preoccupation with human cloning can be made to seem absurd in the company of these twentieth century horrors. Cloning would, however, fit well in a list of things that should never be done to children, including female genital mutilation, forced labor, nonconsensual reproduction, and sterilization. For children, it is a form of child abuse, asexual child abuse. An international ban on human cloning could be the first entry into a new category of international bioethics crimes: (a) human cloning. The clear implication would be that this category should grow and that effective transnational enforcement mechanisms should be

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[74] *Id.*

[75] *Id.* at xvi.

[76] *Id.* at xvii.

created. On this view, which I think is the proper one, the prospect of human cloning provides the world community with a rare, perhaps unique, opportunity to agree that something that can be done scientifically to change the nature of humanity should not be done. This agreement could (and should) serve as a model for much wider international cooperation and regulation in the bioethics and genetics spheres generally.

Other possible entries to this now only imagined (and invisible) category could be (b) research on humans without consent, and (c) physician killing (with or without patient consent). Choice seems a mistaken category for cloning, just as children seem an improper entry under the category products. Like the sheep the little prince finally accepted because he could not see it in its enclosed box, all human children should have the right to live an uncharted life, a life filled with choices they must make themselves, not choices forced on them by another's fixation on duplicating or copying parts of an already-lived life.